# DATA AND PROBABILITY

## Grade 1

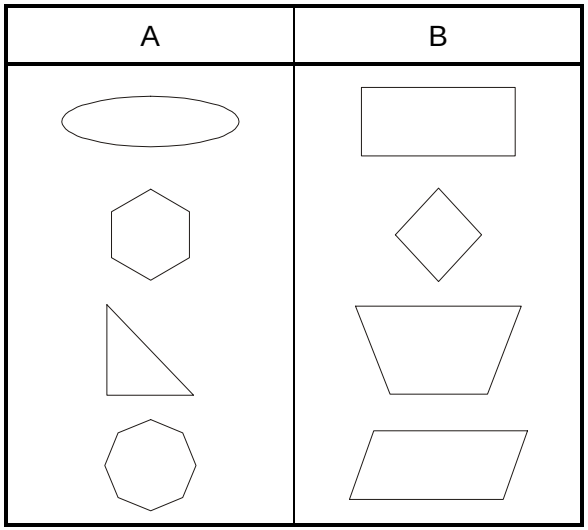
BIG IDEA (1): Formulate questions that can be addressed with data and collect, organize and display data to answer them

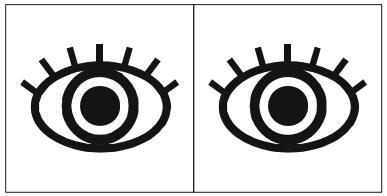
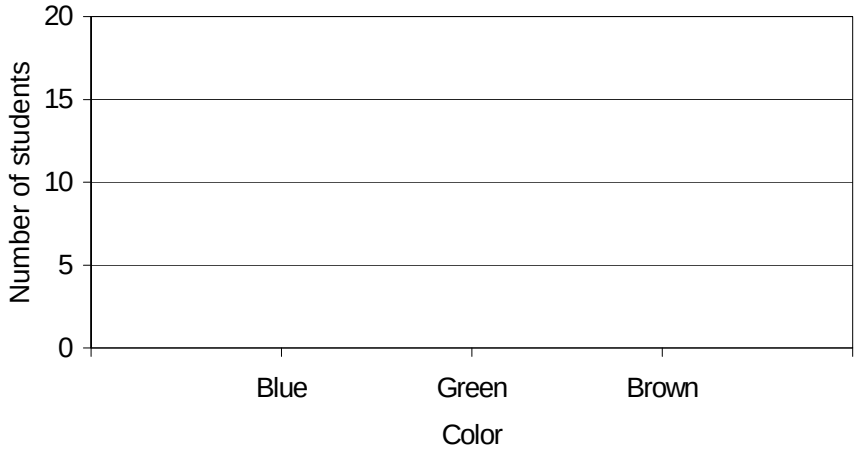
| CONCEPT | EXPECTATION | EXAMPLE |
|---|---|---|
| A Formulate questions | Pose questions and gather data about themselves and their surroundings | Problem:<br>Ask the students to predict the number of brothers most of their classmates have. To help them make their predictions, you might ask them if they think anyone has 10 brothers. You might also clarify by asking them if they can be their own brother. After they make some predictions, explain that they are going to find out how many brothers each person actually has. Distribute a class list to each student to help them keep track of the students who have been surveyed, but the children should decide how they want to collect the data. (They may choose to use linking cubes, tallies, graph paper, etc.)<br><br>After students have collected their data, ask the following questions:<br>1. How many brothers do most of your classmates have?<br>2. What's the least number of brothers your classmates have?<br>3. How could we display our data for everyone to see?<br><br>On another day, the teacher may want students to find out how many sisters most of their classmates have. After collecting data, discussions could include comparisons of the numbers of brothers and sisters.<br><br>TEACHER NOTES:<br>Students should answer and formulate questions relating to "greater than," "less than," "how many more," "how many less," and totals. |

| CONCEPT | EXPECTATION | EXAMPLE |
|---|---|---|
| B Classify and organize data | Sort and classify items according to their attributes | Given a set of objects, students should be able to sort/organize/classify them into two to three groups and identify their common attributes.<br><br>Problem:<br>Give each student graph paper, and ask them to write their name (the one they use at school) on the paper, putting only one letter in each square. Then, ask them to cut out the strip with their name on it.<br><br>  <br><br><br>Next, ask students to think about different ways to sort the name strips (by number of letters, a certain letter, boys/girls names, etc.), then have them sort the strips according to the different criteria. |

DEFINITION:
attribute—a characteristic or distinctive feature—such as shape, size, color—of an object or given set of objects.[1]

[1] Eather, J. A. *A math dictionary for kids.* Retrieved June 5, 2004, from www.amathsdictionaryforkids.com.

| CONCEPT | EXPECTATION | EXAMPLE |
| --- | --- | --- |
| | | Problem:<br>Display the following Mystery Sort, and explain to students that you have sorted the items into two groups. Ask them to identify your mystery rule for sorting (by common characteristics or attributes) each group.<br><br>Mystery Sort<br>  <br><br><br>Answer:<br>A shapes are not four-sided, and B shapes are four-sided.<br><br>TEACHER NOTES:<br>Students should be able to articulate the common attributes of a given set of objects. They should be challenged to recognize sets of objects with the same attributes. Using attribute blocks, have students choose blocks with one or two different attributes and articulate the differences. |

| CONCEPT | EXPECTATION | EXAMPLE |
|---|---|---|
| C Represent and interpret data | Represent data using pictures and bar graphs | Problem:<br>Distribute one eye sheet each as shown below to each student, and ask them to first color it the same color as their eyes.<br>  <br>Ask the students to glue their “eyes” on the class graph (see below) and decide on a name for the graph. Then discuss the data collected, such as the most or least common eye color, etc.<br>  |

| CONCEPT | EXPECTATION | EXAMPLE |
|---|---|---|
| | | TEACHER NOTES:<br>Students should be able to construct pictographs. Bar graphs, with titles and labels, will be created to represent pictographs or physical data.<br><br>Students will create and interpret simple pictographs (graphs that use pictures or symbols to show data) and bar graphs (a graph that uses the height or length of rectangles to compare data). “Younger students might count pockets (Burns, 1996). They could survey their classmates and gather data by listing names, asking how many pockets, and noting the number beside each name. Together, the class could create a large graph to show the data about all students by coloring a bar on the graph to represent the number of pockets for each student.”[2] |

[2] National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 110). Reston, VA: Author.